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09/298,751	04/23/1999	SENG-KHOON TNG	ICEN-P001	2402

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EXAMINER	
ODLAND, DAVID E	
ART UNIT	**PAPER NUMBER**
2662	

DATE MAILED: 09/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/298,751	TNG ET AL.	
	Examiner	Art Unit	
	David Odland	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Amendments to the claims are acknowledged and the 35 U.S.C. 112, second paragraph rejections are withdrawn. Claims 1-14 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1,7,6 and 10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1-14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Referring to claims 1, 7 and 14, lines 6, 5 and 4 respectively, the claims recite rotating the received signal. The specification does not disclose of 'rotating' any received signal.

Claims 2-6 and 8-13 are rejected because they depend on rejected claims.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claims 1, 7 and 14, lines 6, 5 and 4, respectively, the claims recite 'rotating' the received signal. It is unclear what is meant by 'rotating'.

Claims 2-6 and 8-13 are rejected because they depend on rejected claims.

Claim 3 recites that the apparatus comprises a multiplexer coupled to a barrel shift register, which will effectively enable signal switching simultaneously. This limitation is unclear for a number of reasons. It is unclear how selectably coupling a multiplexer to a barrel shift register would enable 'switching simultaneously'. Furthermore, the terminology 'switching simultaneously' implies that there is more than one switching operation being performed at the same time. Also, the claims recites that 'at least one multiplexer' is coupled to 'at least one barrel shift register', which implies that it is possible for the apparatus to consist of only one multiplexer and one barrel-shift register. Therefore, it is unclear how simultaneous switching could occur if the apparatus consisted only of one multiplexer and one barrel-shift register.

Claim 4 recites that the received data signal is converted from parallel to serial form but it is unclear what element of the apparatus performs this function.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,7,9,11-14, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent number 4,665,538 to Machida, hereafter referred to as Machida.

Referring to claim 1, Machida discloses an electronic switching apparatus (a barrel shift circuit including a switching circuit [see abstract]) comprising:

a circuit for receiving at least one input signal from at least one input endpoint (a barrel shifter which receives inputs [see items 31a-31d of figure 3]), the first circuit having at least one barrel shift register coupled to at least one of the at least one input endpoint for receiving the at least one input signal (the barrel shifter comprises an array of barrel shift registers in which the input signals are coupled to [see abstract and figure 3]), shifting and rotating the at least one input signal (the input signals are shifted and moved about the plurality of barrel shift registers [see figure 3]); and

a circuit for sending at least one received signal to at least one output endpoint (a plurality of multiplexers output the signals received from the barrel shifters [see figure 3]. Note, although Machida does not explicitly disclose that the signals are received and transmitted to/from 'endpoints', it is inherent that endpoints exist in the system.

Referring to claim 7, Machida discloses of a method for electronic signal coupling (a barrel shift circuit including a switching circuit [see abstract]), the method comprising the steps of:

receiving a first set of digital signals (receiving a first set of signals [see items 33a-33d of figure 3]), the received first set of digital signals being provided to a plurality of barrel shift registers (the received signals go through the barrel shifter [see item 39 of figure 3]);

shifting and rotating the first set of digital signals (the signals are propagate through the barrel shifter [see figure 3]); and

transmitting a second set of digital signals (transmitting another set of signals [see items 41a-41d]), the transmitted second set of digital signals being provided from a plurality of multiplexers (the other set of signals is from plurality of multiplexers [see figure 3 and column 6 lines 21-26]), the plurality of multiplexers being selectably coupled to the barrel shift registers (the multiplexers are coupled to the barrel shifters [see figure 3]) such that at least one signal selected in the first set of digital signals is selectably coupled for transmission in the second set of digital signals (signals coming into the barrel shifters are switched by the multiplexers and output [see abstract and figure 3]).

Referring to claim 9, Machida discloses the method as discussed above. Furthermore, Machida discloses that the first set of digital signals are transmitted as digital signals in the second set of digital signals separately at different times (the input signals to the barrel registers are switched and multiplexed out as another set of signals one different output lines and at a time later than the signals where received [see figure 3]).

Referring to claim 11, Machida discloses the method as discussed above. Furthermore, Machida discloses that the step of transmitting further comprises transmitting the at least one output signal to at least one multiplexer at different times (the bits are shifted through each barrel shifter serially and therefore each of the bits of the second set of signals are sent to the multiplexers at different times [see figure 3]).

Referring to claim 12, Machida discloses the apparatus as discussed above. Furthermore, Machida discloses that the barrel shift register is a loadable barrel shift register (the barrel shifters are loadable with data bits [see figure 3]).

Referring to claim 13, Machida discloses the apparatus as discussed above. Furthermore, Machida discloses that the apparatus further comprises a plurality of multiplexer modules (the apparatus comprises a plurality of multiplexers [see figure 3]).

Claim 14 is rejected for the same reasons as claim 7.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,2,5,6, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent number 4,512,018 to Phelps et al., hereafter referred to as Phelps.

Referring to claim 1, Phelps discloses of an electronic switching apparatus (a shifter for multiplexing bytes [see abstract]) for flexibly interconnecting a plurality of signal endpoints (for transmitting data between devices [see column 1 lines 11-19]), the apparatus comprising:

a circuit for receiving at least one input signal from at least one input endpoint (a shifter which receives inputs from a device [see figure 2]), the first circuit having at least one barrel shift register coupled to at least one of the at least one input endpoint for receiving the at least one input signal (the shifter comprises an array of barrel shift registers in which the input signals

are coupled to [see abstract and figures 2 and 3]), shifting and rotating the at least one input signal (the input signals are shifted and moved about the plurality of barrel shift registers [see column 4 lines 1-33]); and

a circuit for sending at least one received signal to at least one output endpoint (the received signals are shifted, multiplexed and transmitted out to another device [see figures 2 and 5]).

Although, Phelps does disclose the functionality of the switching apparatus as discussed above, Phelps, does not explicitly disclose that it is made up of a first and second circuit. However, it is well known in the art that dividing the functionality of a system into separate components will increase the circuits overall flexibility in terms of ease-of-replacement, if one of the components becomes inoperable, or in terms of ease-of-upgrade ability, if one of the components becomes obsolete. In either case it is easier and cheaper to change a component of the system rather than the entire system. Therefore, it would have been obvious to one skilled in the art at the time of the invention to divide the functionality of the switching apparatus into separate circuits rather than having a combined circuit, as taught by Phelps, because doing so would provide for a more flexible switching apparatus.

Referring to claim 2, Phelps discloses the switching apparatus as disclosed above. Phelps does not disclose that the input signal is received in serial form including a plurality of data channels interleaved between them. However, it is a well established standard in the art to transmit and receive signals in Time Division Multiplex (TDM) format, which comprises of a signal wherein a plurality of channels are interleaved and transmitted/received in serial form. Therefore, it would have been obvious to one skilled in the art at the time of the invention to

receive the data in a signal of serial form wherein a plurality of data channels are interleaved therein, in the apparatus taught by Phelps, because doing so is a well-established standard in the art.

Referring to claim 5, Phelps discloses the switching apparatus as discussed above. Furthermore, Phelps discloses that the barrel shift register interconnects a plurality of received input signals at different times (the plurality of input signals are interconnected into different time slots and then output [see figure 2]).

Referring to claim 6, Phelps discloses the switching apparatus as discussed above. Phelps does not explicitly disclose that the endpoint is one of the AC97 or 12S conventions. However, it is well known in the art that AC97 and 12S are widely used well-established standards for data coding. Therefore, it would have been obvious to one skilled in the art at the time of the invention to utilize the system of Phelps in conjunction with the AC97 or 12S conventions because of their well established and widely used standards.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Machida in view of Phelps.

Referring to claim 8, Machida discloses that the first set of digital signals comprises a data signal, which is received in either serial or parallel form (the barrel shifter receives the data in parallel form [see item 31a-31d of figure 3]). Machida does not disclose that the data signal is converted to serial form when received in parallel form. Phelps discloses of a barrel shifter circuit, which receive signals form its parallel inputs (i.e. items A0-A3 of item 40 in figure 2), shifts them, and outputs them in serial form (i.e. output X0 of item 45). It would have been

obvious to one skilled in the art at the time of the invention to use the parallel to serial conversion method as taught by Phelps in the method of Machida because doing so would allow the system of Machida to be more flexible in the types of data it receives (namely, the system of Machida will be able to receive parallel or serial data).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Machida.

Referring to claim 10, Machida discloses the coupling method as discussed above, in the 35 U.S.C. 102 (b) rejection of claim 7. Machida does not explicitly disclose that the transmitted signal is one of the AC97 or 12S conventions. However, it is well known in the art that AC97 and 12S are widely used well-established standards for data coding. Therefore, it would have been obvious to one skilled in the art at the time of the invention to utilize the system of Phelps in conjunction with the AC97 or 12S conventions because of their well established and widely used standards.

Allowable Subject Matter

9. Claims 3 and 4 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first and second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. The following prior art, which is made of record and not relied upon, is considered pertinent to applicant's disclosure:

a. U.S. Patent Number 4833673 to Chao et al.

b. U.S. Patent Number 4914655 to Johannes et al.

c. U.S. Patent Number 5555202 to Chu.

d. U.S. Patent Number 5892604 to Yamanaka et al.

e. U.S. Patent Number 6172626 to McDonnell et al.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Odland, who can be reached at (703) 305-3231 on Monday – Friday during the hours of 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou, can be reached at (703) 305-4744. The fax number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, who can be reached at (703) 305-4750.

deo

September 11, 2002

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600